

# AirWaves

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## A Note From the Editor

Here we go! This issue is just packed with fantastic stuff. So find yourself a comfy spot, grab your spectacles and start reading. I am excited at all the information we are able to send your way. In this issue you will get to learn about four more of our medical crewmembers. Once again, it just amazes me the qualifications, credentials and abilities of the Air Care associates.

We take pride in our professionalism, our highest level of training and our top priority of SAFETY COMES FIRST ALWAYS!!

We are still looking for ideas, suggestions, questions and/or comments. Keep sending the photos my way; I have received some great ones! Send all emails to [lkriley@aircare.org](mailto:lkriley@aircare.org), subject Air Waves. Until our next issue everyone stay safe, take care and have yourselves a great day.

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## New Air Care Associate

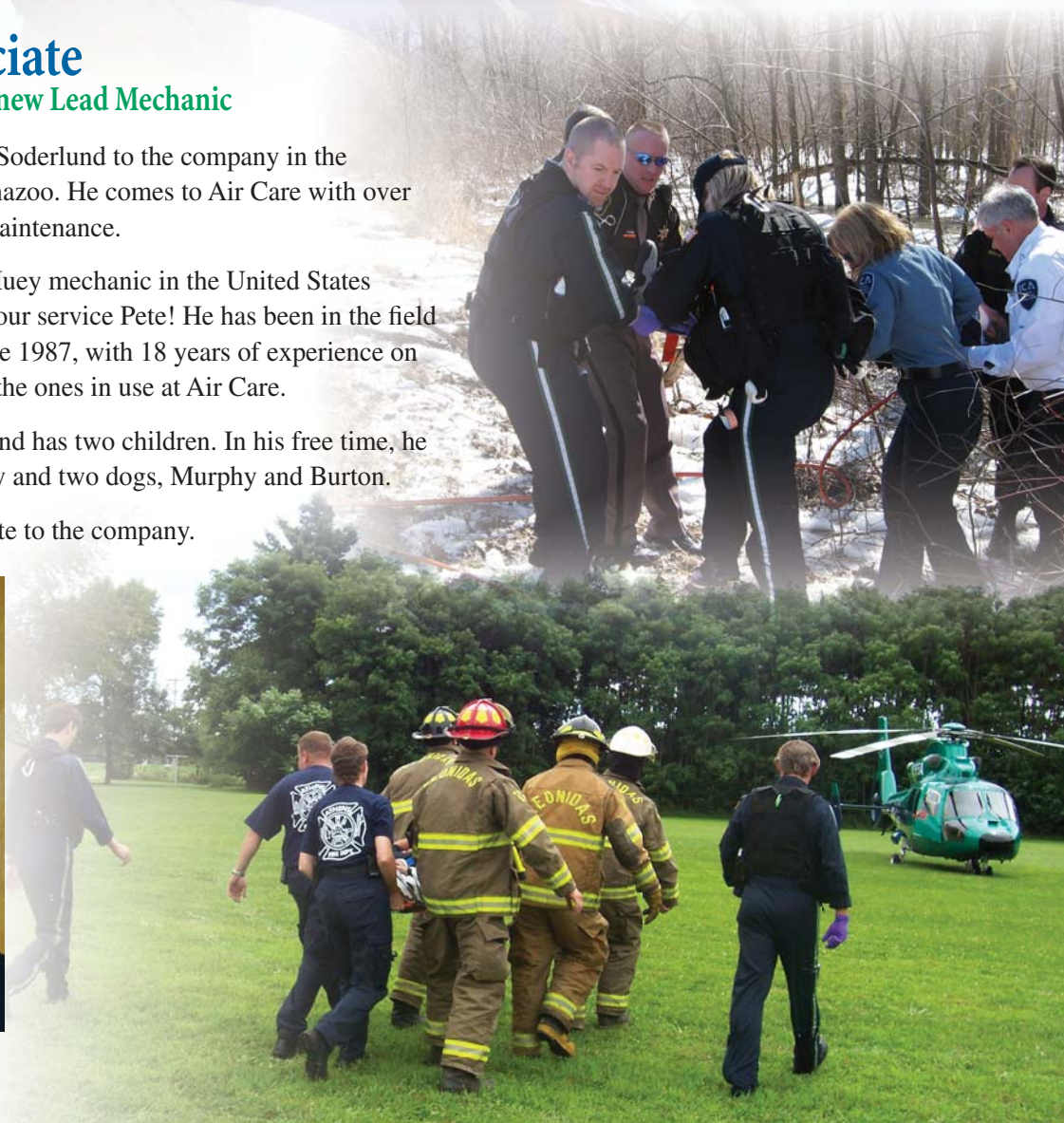
Please join us in welcoming our new Lead Mechanic

Air Care is proud to welcome Peter Soderlund to the company in the position of Lead Mechanic in Kalamazoo. He comes to Air Care with over 30 years of experience in aviation maintenance.

Pete started his career serving as a Huey mechanic in the United States Marine Corps in 1976. Thanks for your service Pete! He has been in the field of EMS helicopter maintenance since 1987, with 18 years of experience on the AS 365 Dauphin helicopter like the ones in use at Air Care.

Pete has been married for 27 years and has two children. In his free time, he enjoys spending time with his family and two dogs, Murphy and Burton.

Air Care is delighted to welcome Pete to the company.



## Case Review: Flight Nurses Nick & Kevin

On October 1st of this year, personnel involved in the care of patient Peter Davis, had the opportunity to see this patient for the first time since he was cared for just over one year ago. Mr. Davis, whom was having chest discomfort, immediately came to the Sturgis ED to have his chest discomfort evaluated. On duty in the Sturgis ED was Dr. John Robertson whom diagnosed Pete with having an acute myocardial infarction (AMI) and now needing transport to a tertiary cardiac hospital. Waiting for Pete was Dr. Benjamin Perry, a Cardiac Specialist, whom accepted Pete as a patient transfer to Bronson Methodist Hospital and would perform immediate cardiovascular intervention in an attempt to reestablish blood flow to the dying part of Pete's heart. In order to expedite the transport phase of this patient's care and provide optimal care during that transport, Dr. Robertson placed a call into West Michigan Air Care and requested the helicopter team. The team that day included communication specialist Steve Rietkerk, pilot Brian Vanderberg and flight nurses Nick Wright and Kevin Franklin.

During the response to Sturgis hospital the patient report received from communications was much like most cardiac reports the flight crew receives during their response; patient was suffering an acute MI, was awake and alert, on oxygen, nitroglycerin

and heparin drips, and needing immediate transport to the cardiac cath lab. During the response to Sturgis Hospital, nurses Nick and Kevin discussed the patient and the plan of care the patient would require as well as prepare the medications needed during the transport phase. With cardiac patients being a large percentage of the patient types that Air Care transports, this was a "usual" transport for our organization.



*Peter and his wife Ann.*

Upon arrival in the Sturgis ED flight nurse Nick received report from Dr. Robertson and reviewed the patient's EKG, chest X-ray and pertinent lab values. Nick then came to the bedside to meet the patient and complete a focused patient assessment. During this time flight nurse Kevin began changing the patient's IV drips and monitoring equipment over to portable transport equipment while pilot Brian calculated appropriate weight and

balance of the patient and prepped the stretcher. Pete was then moved over to the aircraft gurney and family was invited to the bedside to say goodbye prior to departure.

Just after leaving the ED room, Pete was noted to have an erratic waveform pattern on the cardiac monitor but remained alert. A quick pulse check revealed no pulse and Pete rapidly lost consciousness. Immediate defibrillation was performed and CPR was only

required for several seconds before he regained consciousness. Discussion ensued between the patient, flight team and the sending physician Dr. Robertson regarding treatment of the patient and collectively it was decided that this was most likely an isolated ventricular arrhythmia. With this noted the goal was to continue the transport and provide further intervention if needed during the transport. Family once again



*Pilot Brian, Ann and Peter, and Flight Nurse Kevin.*

said goodbye to the patient and transport to the aircraft began.

Once again though a ventricular arrhythmia was noted on the monitor and loss of pulses required a second defibrillation and short span of CPR. At this point with Pete's arrhythmia appearing to be more of a refractory type, the flight crew requested the anti-arrhythmic Amiodarone from the hospital staff. Unfortunately Pete experienced ventricular fibrillation a third time prior to anti-arrhythmic administration and CPR was again immediately implemented. Since Pete had been refractory to defibrillation alone already the flight crew continued CPR for an additional two minutes after administration of the anti-arrhythmic. Defibrillation and an additional two minutes of CPR followed at which time a pulse check revealed return of strong pulses.

Due to the length of time that Pete required resuscitation and

the hemodynamic compromise the patient exhibited, the decision was made collectively with the sending physician and flight crew to provide further stabilization prior to reinitiating transport.

With airway compromise already present flight nurses Nick and Kevin utilized rapid sequence induction to perform immediate endotracheal intubation. This allowed the best chance for first pass success while also minimizing hemodynamic changes that Pete would exhibit from the procedure. Next a continuous anti-arrhythmic infusion was initiated in order to prevent the recurrence of the lethal arrhythmia that had already occurred.

Once again family was invited to the bedside, information related to current care were given and expected changes were discussed. Now 24 minutes past acute patient deterioration, transport was once again initiated. Fifteen minutes after departure from the Sturgis hospital helipad the patient

arrived at the Bronson Hospital helipad with no further changes in Pete's status during the flight.

Pete was taken directly to the cardiovascular lab and Dr. Perry received care. Continued treatment and intervention resulted in angioplasty of the affected artery and placement of a cardiac stent. Pete was then sent to recovery and was extubated shortly thereafter and completed an uneventful stay at Bronson Hospital. Continued cardiac rehabilitation and follow up with Dr. Perry has given Pete the chance at continued life.

As with Pete, this collaborative work between EMS agencies, outlying hospitals like Sturgis Hospital, Air Care and tertiary receiving hospitals like Bronson Methodist Hospital lead to improved patient outcomes for cardiac care. Air Care is proud to be part of this exemplary team and to provide not only speed in transport but also the highest level of transport care available to any patient transport in Michigan. We thank Pete and his family for this opportunity to not only care for him during his AMI but also for his willingness to have his story told and make a difference for future patients.



**DeWayne**  
**RN, NREMT-P, CFRN**  
*Flight Nurse*

DeWayne started his career in emergency medicine as a paramedic working for a hospital based EMS service. His responsibilities included duties in the emergency department, on interhospital transfers and responding on 911 calls. After six years there, he joined the team at Air Care for an on call position with

their newly organized Fixed Wing division. This branch of Air Care provided transports nation wide and utilized Leer jets and King Air turbo prop aircraft.

During this time he was taking classes for nursing school at Glen Oaks Community College. He also completed a UMBC sponsored critical care paramedic course at Loyola University in Chicago. DeWayne became an ACLS instructor and added PALS, PHTLS & NRP to his list of credentials.

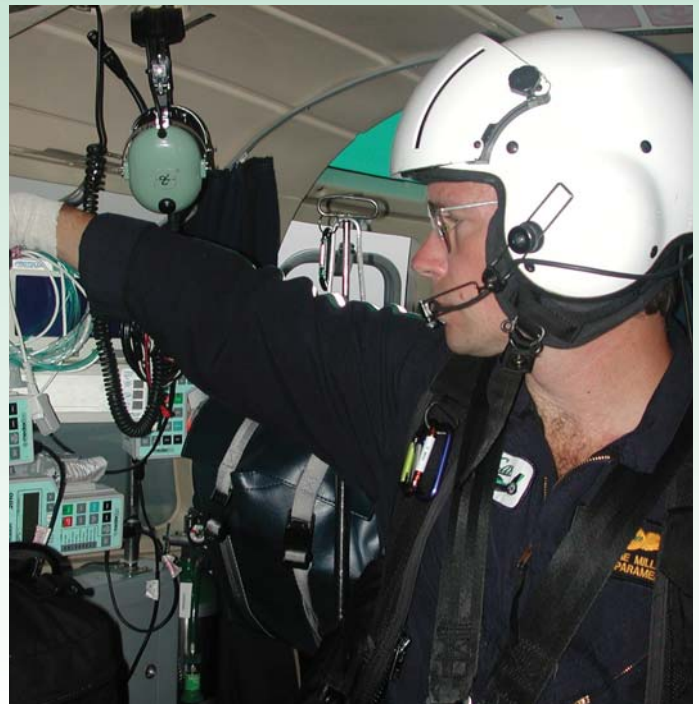
In 1998, after three years of fixed wing employment, DeWayne moved to a full time Flight Paramedic spot on the helicopter (Rotor Wing) branch.

When he graduated from nursing school he began working in the critical care center at Elkhart General Hospital to help broaden his clinical experience. Over the following years he also worked as PRN staff in the Emergency Departments at Parkview

LaGrange, Three Rivers and presently at Borgess Hospital.

Along the way, Air Care transitioned him from Flight Paramedic to Flight Nurse status and in the normal Air Care style more certifications were added. Transport Nurse Advanced Trauma Class (TNATC) and Certified Flight Registered Nurse (CFRN).

In his spare time, DeWayne and his wife enjoy camping, roaming Mexico, and long distance running. Between the two of them they have completed 15 marathons.





**Mike**  
**EMT-P, I/C**

*Flight Paramedic*

Mike began his career in EMS in 1983 serving his country as a combat flight medic in the U.S. Army. While stationed in Germany, he served with the 3rd Infantry Division. Nearing the end of his military career in 1988, Mike found a true interest in teaching while stationed as training cadre at Ft

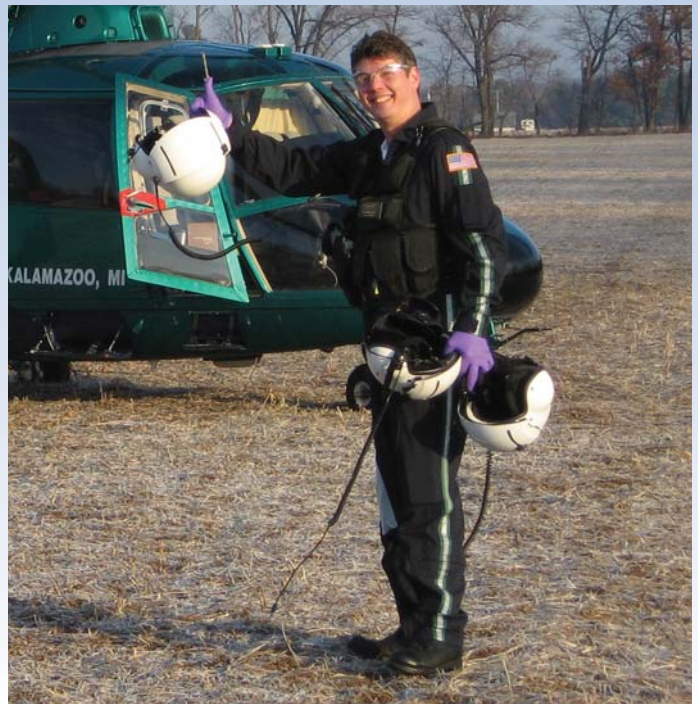
Sam Houston, in San Antonio, Texas at the College of Health Sciences.

Serving his community that he grew up in, he worked EMS in the streets of Kalamazoo as a ground medic for over ten years. Mike is a graduate of Kalamazoo Community College where he has returned to instruct on occasion. He is very still active with the local EMS department providing education and quality improvement projects.

In July of 1995 Mike accepted an on call position with West Michigan Air Care transporting critically ill patient's long distances aboard a fix wing aircraft. Although Mike had flown in the military, and had several years as a ground medic, this was the first opportunity to be challenged with critical care. During the summer of 1999 West Michigan Air Care offered Mike a full time rotor wing position which he accepted with a great deal of pride. Mike was the 3rd flight paramedic to ever be hired by Air Care and is still the only crew member currently wearing "Flight

Paramedic" on his uniform although, currently completing his nursing education requirements.

Mike spends a great deal of time away from work, contributing education to other health care providers at the local hospitals, and first aid and CPR to lay persons. Mike is certified to instruct Advanced Cardiac Life Support, Prehospital Trauma Life Support, Basic Life Support, Pediatric Advanced Life Support, and is licensed at and EMS Instructor Coordinator by the State of Michigan. Mike enjoys showing guidance to individuals who seeks a career in the Air Medical industry.





**Kevin**  
**RN, MSN, NP-C, CFRN,**  
**NREMT-P**  
*Flight Nurse*

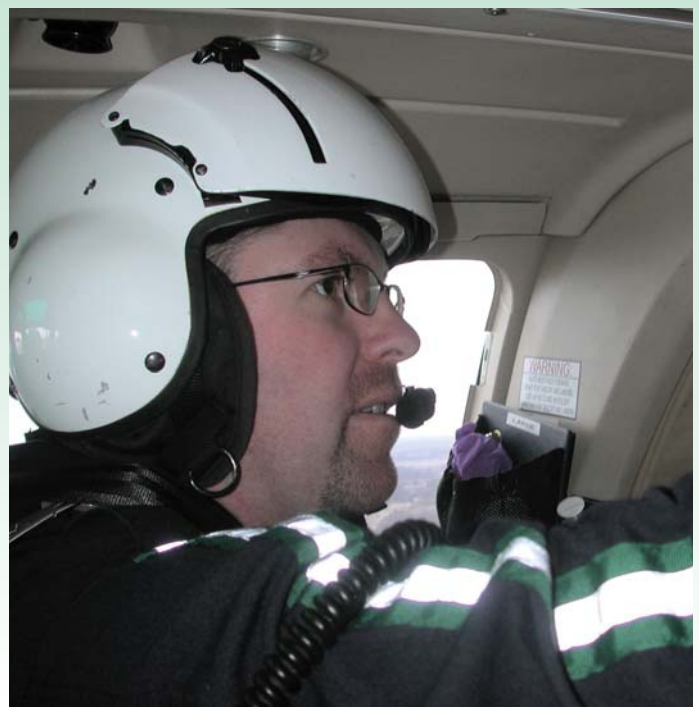
As a teenager, Kevin wanted to combine his interest in medicine and sports and decided to pursue a career as an athletic trainer. Little did he know how his career would change over the years. Graduating from Alma College in 1992, Kevin started his career with Carter Rehab

Center in Tecumseh, MI as an athletic trainer. A few years later, he moved to St. Joseph, MI and continued to work as an ATC with Lakeland Sports Physical Therapy.

To supplement his knowledge, he took a Basic EMT course. During a one of his clinical days, he helped with a scene flight with West Michigan Air Care. That call started a change in career paths as he worked towards earning a paramedic certificate and graduating from Regents College (now Excelsior College) in 1998. His nursing career started at Lakeland Health in the ED and his EMS career with Medic 1, both in St. Joe. To gain valuable trauma experience, he moved up to Spectrum Butterworth in 1999. In 2001, he accepted a ground transport position with Duke LifeFlight which started his critical care transport experience. Once a position opened at Air Care, he jumped at the opportunity and was hired as a flight paramedic and eventually was able take a position as a flight nurse.

In 2005, Kevin decided to further his education and started the masters in nursing program at Michigan State to become a family nurse practitioner. After graduating in 2007, he continued to work full time with Air Care and is working part time in the Emergency Department at South Haven Community Hospital.

Throughout his education and work experience, Kevin has enjoyed the continued challenge of flight nursing and now also as a nurse practitioner.





**Kevin**  
**CFRN, EMT-P**  
*Flight Nurse*

Kevin became interested in medicine in 1990 when he took a position as an orderly while going to school for criminal justice. Within a short time his interest in medicine outweighed interests in law enforcement and over the next two years he pursued a paramedic certificate from Lansing Community College. After graduation he began his new career as a field paramedic for Life EMS of Kalamazoo.

Over the next 14 years Kevin spent his time actively participating in the treatment of thousands of patients. During this time he would frequently look at the Air Care helicopter and wonder what would it take to become part of that team? One not to put all of his eggs in one basket though, Kevin

actively pursued his continuing education and in 1996 graduated again from LCC with an associate's degree in Molecular Genetics. He then proceeded to Michigan State University where he completed a dual major Bachelors of Science in Microbiology and Physiology while participating in an active research lab. Upon graduation in 1999 Kevin continued his education in the Department of Microbiology and Molecular Genetics enrolled in the graduate program and doing research on Beta-Mannosidosis (a metabolic genetic disorder).

Life again changed in 2002 when he met his wife Lori and Kevin decided that bench work research was not where he wanted to be. In light of life's changes he went to work for Bronson Methodist Hospital's Trauma and Emergency Center and returned to LCC for another degree in nursing in order to pursue clinical research. Just prior to graduation in 2005, Kevin accepted the opportunity to fly with Air Care as a flight paramedic. During this time he continued employment part time in the hospital as an RN while continuing flight status as a flight medic for Air Care.

In 2006 Kevin was promoted to the role of Flight Nurse at Air Care and continued his work in the T & EC of Bronson Hospital. During this time Kevin was actively involved in crew education, teaching for both Bronson and Borgess hospitals ACLS and PALS programs, and preparing for Board Certification in Flight Nursing. In 2007 Kevin proceeded to include teaching for Kellogg Community College's CCEMT-P program and obtained his Certification of Flight Registered Nurse (CFRN). In addition, Kevin took on the role as Utilization Review Coordinator for Air Care, became a preceptor for new associates and began

contributing to a current research study already in process.

This past year Kevin has been a speaker at the local Michigan EMS EXPO conference as well as a national speaker at the 2007 Air Medical Transport Conference held last October in Tampa, FL. In addition Kevin has transitioned to the Surgical Intensive Care Unit at Bronson Hospital in order to broaden his knowledge of surgical ICU patients and the current treatment modalities these patients require.

Kevin enjoys his time off with his wife Lori, daughter Sara and stepchildren Logan and Megan. Kevin and his family enjoy traveling throughout the country when off duty. Kevin sums up life by saying "in life you really only have 2 choices, you can either laugh or cry, I just prefer to laugh". With regards to his career in medicine and nursing, Kevin says that flight nursing was the best way to combine the skills and training of a paramedic with the background and bedside care of an RN. "I still get to do scene calls and chaotic ER flights and also feel comfortable with high intensity ICU transports, I couldn't ask for a better combination. Of course, I love to fly and that just tops it off ☺"

Kevin says that he feels honored to be part of the link in a patient's chain of survival, whether from an accident scene or a medical emergency. "This is the best job in the world for me because helicopter transport allows advanced care to arrive at a patient's side in a short period of time for such a large service area. I am humbled though, because it takes the whole Air Care team to make that happen."



# Air Care Adds Toledo Life Flight – Rick Morley, Program Director/Director of Operations



ST. VINCENT MERCY MEDICAL CENTER

UNIVERSITY OF TOLEDO MEDICAL CENTER

ST. RITA'S MEDICAL CENTER CRITICAL CARE TRANSPORT NETWORK  
AVIATION OPERATIONS PROVIDED BY WEST MICHIGAN AIR CARE, INC.

In 1993 West Michigan Air Care began operations from Kalamazoo, MI. Prior to conducting patient flights, Air Care obtained an Air Carrier certificate from the Federal Aviation Administration that allows on demand transportation of passengers (patients) for hire. All civilian Air Medical Transport providers must either hold an air carrier certificate, or as is more commonly the case, contract for that service with an organization that does. This “vendor” is typically a company whose primary business is aviation operations, possibly including fixed wing aircraft as well. As a result of a cooperative relationship that had developed between Air Care and Life Flight of Toledo Ohio, on Feb. 1, 2008, Air Care began to provide aviation management services to that program. Both Air Care and Life Flight are CAMTS accredited.

Life Flight was founded in August of 1979 by Dr. Frank Foss, a prominent Toledo area surgeon. Dr. Foss realized the need for aero medical transport after his son was severely injured and rapid transport to a major trauma center was not available.

Shortly thereafter, Life Flight commenced operations from St. Vincent Mercy Medical Center in Toledo with an Aerospatiale Allouette III helicopter. In the early 1980's the Allouette was replaced with an AS 365N Dauphin, the same

type of helicopter that has been a familiar sight in the Kalamazoo skies for many years now.

In 1993 the Life Flight program grew as a partnership and was forged with the Medical College of Ohio Hospital, now known as the University of Toledo Medical Center. This necessitated the



purchase of an additional Dauphin aircraft, also based in Toledo. Five years later, the program entered into an agreement with St. Rita's Medical Center of Lima Ohio. A third Dauphin was added to the fleet located at the airport in Bluffton, Ohio.

In May of 2002, an Agusta A109E Power was added to the fleet and located at the Sandusky County Regional Airport. Concurrently the second Dauphin in Toledo was repositioned to the Fulton County Airport in Wauseon, OH. At this point the Life Flight network was strategically positioned to provide

rapid response from the outlying areas of northwest Ohio. Life Flight 1, was based in Toledo, Life Flight 2, at Wauseon, Life Flight 3 at Bluffton with Life Flight 4 responding from the Fremont/Clyde area. Eventually two additional Agusta Powers were added to the fleet, one



replacing the original Dauphin and the second giving backup capability to cover the four bases. Last year the Life Flight program transported approximately 2400 patients within the existing service network.

Shortly after coming on board with Air Care, Life Flight opened their fifth base, Life Flight 5 in Milan, Ohio, approximately 80 miles east of Toledo. This base is covered with one of the Agusta A 109E helicopters and is collocated with North Central EMS. This aircraft location is a joint project with Community Health Partners of Lorraine, OH.

Life Flight's aviation staff of 22 pilots and eight maintenance technicians are directly employed by West Michigan Air Care, Inc.. All pilots and mechanics employed by the previous vendor made the transition to work with Air Care. Mike Conrad has been appointed Aviation Manager for the Life Flight segment of Air Care operations and is designated as Air Care Assistant Chief Pilot. In this capacity, Mike oversees Ohio aviation operations, interaction with St. Vincent management personnel, and reports to Chief Pilot Mark Brynick of Kalamazoo. He is assisted in this task by Site Managers Brian Conroy (LF1), Krystian Zygowiec (LF2), Nick Vance (LF3), Lee Brothers (LF4), Steve Baird (LF5), and Stan Kocol (Life Flight Safety Manager). Each site has an assigned Airframe and Powerplant Mechanic. Maintenance activities are supervised by James Helkey, Ohio Lead Mechanic who reports to Air Care Director of Maintenance, John Eichel. Major maintenance activities, including tasks as complex as 600 hour inspections on the Dauphin aircraft are carried out in the Toledo hangar.

St. Vincent Mercy Medical Center (SVMMC) employs all medical personnel. Crews consist of various combinations of Flight Nurse, Flight Paramedic or Flight Physician depending on location and mission requirements. Specialty teams are available for neonatal, pediatric, and patients requiring specific services – such as Intra Aortic Balloon Pump, or Ventricular Assist Devices.

In addition, Life Flight operates Mobile Life, a network of ground Mobile Intensive Care Units, rounding out the critical care transport capabilities provided by St. Vincent's. Program Director Lori Mizla provides leadership from the hospital side of Life Flight's operations.

SVMMC staffs a Communication Center around the clock to take transport requests, coordinate sending and receiving arrangements and keep track of both the Life Flight and Mobile Life MICU units. The Communication Center advises Air Care Communications in Kalamazoo of all patient flights to ensure that flight following is accomplished in accordance with FAA regulation. All aircraft are equipped with GPS based automatic flight following systems that transmit position information to both communication centers. Aircraft positions are continuously updated on computer monitors.

The Air Care Business Office has experienced a significantly increased activity level since entering into the relationship with Life Flight. Assistant Program Director Beth Hauck now oversees payroll, human resource and related functions for

approximately sixty employees Beth also juggles aircraft related expenses for parts, warranty service and aircraft and engine support programs related to the five Ohio helicopters.

Both Kalamazoo and Toledo have company designated instructor pilots and FAA designated check airmen on staff. This gives the opportunity for instructors to do



training at either location, giving more depth to each program's training activities. It also allows Air Care to plan additional training activities in which costs can be shared.

As all aircraft are now operated under one air carrier certificate, Air Care has the option of using Kalamazoo's dedicated back up helicopter to serve the Ohio bases. Residents of the area west of Toledo may have seen Air Care's distinctive blue and green helicopter in their area this summer as it filled in during Toledo based maintenance activities.

On behalf of Air Care's Kalamazoo based staff, we welcome Life Flight to the family and look forward to working together to provide the highest quality air medical transport to the residents of southern Michigan and northwestern Ohio. Please take time to view the Life Flight website at: <http://www.lifeflight.cc/>

## Helicopter Vibration – Brian Vanderberg, Pilot

Aircraft, both rotary and fixed wing, produce perhaps the most severe noise and vibration environments experienced by aircrew members. Mechanical vibration of aircraft leading to increased noise levels and whole-body vibration causes adverse effects on the health of aircrew and passengers. These biomechanical force environments, singly and in combination, threaten the health, safety, and

to the characteristics of the vibration such as the frequency, magnitude and duration of the exposure.

However, there are currently no widely accepted guidelines for vibration exposure limits with respect to human comfort and health risks. OSHA does not have standards concerning vibration exposure. The American Conference of Governmental Industrial

surface. In the context of aircraft, personnel are exposed to vibration when seated on a vibrating seat, are in contact with the backrest of a seat, or when standing on a vibrating floor. The amount of vibration exposure depends on a number of factors; including the type and design of aircraft, the speed at which it is moving, the environmental conditions and body posture. In addition, ground and maintenance crew can



well-being of people associated with or exposed to aircraft operations. Mechanical vibration transmitted to human operators can induce fatigue, degrade comfort, cause temporary hearing loss, interfere with performance effectiveness, and under severe conditions, influence operational safety and occupational health. Long-term and extended exposure to whole-body vibration has been linked to chronic back pain. The extent to which these effects are felt has been connected

Hygienists (ACGIH) has developed Threshold Limit Values (TLVs) for vibration exposure to hand-held tools. The most widely used document on whole-body vibration is the “Guide for the Evaluation of Human Exposure to Whole Body Vibration (ISO 2631),” which has received criticism regarding the validity of the evaluation procedures that are defined, and the ambiguity in the wording of the standard.

Whole-body vibration occurs when the body is supported by a vibrating

be exposed to whole-body vibration through the airborne transmission of sound pressure waves. They can be exposed to sufficient frequency amplitudes that will cause tissue vibration and/or movement in the body cavities and air-filled or gas-filled spaces. This can induce symptoms such as nausea, coughing, headache and fatigue.

Human response to whole-body vibration exposure can be psychological or physiological, temporary or chronic. The body reacts in various ways to

vibration: vibration can cause short-term acute effects (temporary hearing loss, affect concentration, and cause sleep disturbance) because of the biomechanical properties of the body. The human body acts like a series of objects connected by springs; connective tissue that binds major organs together reacts to vibration in the same way springs do. When the body is subjected to certain frequencies; the tissue and organs will begin to resonate (increase in amplitude), when objects reach their resonant frequencies they create a momentum, which increases in intensity with each oscillation. Without shock absorption, vibration will damage the mass or organ.

Helicopters subject aircrew members to vibrations over a frequency range that coincides with the resonant frequencies of the body. Prolonged contact with vibration causes short-term effects, as well as long-term effects to the body. Minor amplitudes of the vibration and the ability of the body to provide some dampening are reasons why humans do not receive injuries every time they fly. Vibration can affect the respiratory system as well as cause motion sickness, disorientation, pain, microcirculatory effects, and visual problems.

Noise and vibration are known to affect the cognitive performance, hearing, motor control and vision of humans. The motion that is induced by vibration can also affect an individual's ability to perform certain tasks (in-flight endotracheal intubation, IV access, reading small print on medication vials). In an aeromedical environment, sharp performance and clear communication between crewmembers are essential.

Vibration cannot be eliminated, but its effects on human performance and physiological functions can be



lessened. Improvements in the ergonomic design and mechanical design of vehicles over the years, has helped to reduce vibration transmission to the crew/passenger. New technologies such as active vibration control can help reduce structure-borne vibrations and improve the performance of vibration isolators so as to decrease noise levels in vehicle cabins and increase crew/passenger comfort. Various preventive measures can be taken to reduce the effects of vibration:

- » Maintain good posture in flight. Sitting straight in the seat will enhance blood flow throughout the body.
- » Restraint systems provide protection against high-magnitude vibration experienced in turbulence.
- » Proper aircraft maintenance, such as blade tracking, can reduce unnecessary vibration exposure.
- » Limit exposure time (most of Air Care's flights are short intervals with breaks in between legs).
- » Maintain excellent physical condition. Fat multiplies vibration while muscle dampens vibration. Strong muscles act to reduce the magnitude of oscillations encountered in flight (damping). An overweight aircrew member is more susceptible to decrements in performance and the physiological effects of vibration.
- » Good Physical condition can also lesson the effects of fatigue. Being in good physical condition permits one to continue to function during extended operations with minimum rest.
- » Maintain sufficient hydration. Dehydration, coupled with vibration, can cause fatigue twice as fast and double the time needed for recovery.

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